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NOTE BY THE SECRETARY-GENERAL

The Secretary-General has the honour to transmit to the members of the Security Council the attached communication which he has received from the Acting Director General of the International Atomic Energy Agency (IAEA).

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Annex

Letter dated 12 August 1992 from the Acting Director General of the International Atomic Energy Agency addressed to the Secretary-General

Please find attached the report of the thirteenth inspection of the International Atomic Energy Agency (IAEA) in Iraq under Security Council resolution 687 (1991). You may deem it appropriate to transmit the report to the members of the Security Council. The Director General remains, of course, available with the Chief Inspector, Mr. Richard Hooper, for any consultations you or the Council may wish to have.

(Signed) Sueo MACHI
Acting Director General

Appendix

REPORT ON THE THIRTEENTH IAEA ON-SITE INSPECTION IN IRAQ
UNDER SECURITY COUNCIL RESOLUTION 687 (1991)

14-21 July 1992

SALIENT POINTS

Work begun during the twelfth mission to destroy key installations at the Tarmiya and Ash Sharqat electromagnetic isotope separator (EMIS) sites was largely completed during the thirteenth mission. A total of eight buildings, four at each site, were destroyed. Included among them are the buildings intended to house the 600 mm EMIS units (i.e., beta stage separators). The Iraqi side was requested to complete the few remaining activities before the end of August for verification by the fourteenth IAEA team.

The maraging steel pieces stored at Iskandariya have been individually identified and photographed. They will be transported to a foundry near Basra where the pieces will be remelted and diluted with equal amounts of carbon steel during a future mission.

Additional technical data and contract numbers necessary to identify or confirm the identities of manufacturers/procurement routes for the centrifuge related furnaces and the electron beam welder were collected by the thirteenth inspection team.

As was the case in previous missions, the Iraqi side provided all equipment, materials and manpower necessary for the efficient implementation of the destruction plan under the supervision of the IAEA team.

INTRODUCTION

1. The present report summarizes the activities of the thirteenth inspection mission carried out by IAEA under United Nations Security Council resolution 687 (1991), with the assistance and cooperation of the Special Commission of the United Nations. The mission took place from 14 to 21 July 1992 and was headed by Mr. Richard Hooper of IAEA as Chief Inspector. The team consisted of eight inspectors and one support personnel; it comprised eight nationalities.

2. The objectives of the inspection mission were:

(a) To supervise the completion of the destruction of key technical installations at the Tarmiya and Ash Sharqat sites;

(b) To prepare the maraging steel for shipment from the Iskandariya State Enterprise for Mechanical Industries to a foundry near Basra;

(c) To collect detailed technical data on four furnaces and an electron beam welder (EBW) intended to be used in the Iraqi centrifuge manufacture programme and on a similar EBW that had been installed at Tuwaltha.

3. Monitoring activities, including checking the water level in the irradiated fuel storage tanks at location B, seal checks and assessing the progress of requested equipment movements at Ash Shakyli were also on the team's agenda. A total of five facilities and sites were inspected. These are shown in table 1. All of these facilities and sites had been inspected previously by an IAEA team.

Table 1

List of facilities and sites inspected during the thirteenth inspection mission

1. Tuwaltha site and associated locations (location B, Ash Shakyli storage, Al Nafad storage).

2. Tarmiya site.

3. Ash Sharqat site.

4. State Enterprise for Heavy Engineering Equipment (Daura).

5. Iskandariya State Enterprise for Mechanical Industries.

I. SUMMARY

4. A list of actions to be undertaken pursuant to resolution 687 (1991) with respect to EMIS facilities at the Tarmiya and Ash Sharqat sites had been communicated by IAEA to the Iraqi authorities on 15 May 1992 (see annex 1). Work started during the twelfth IAEA mission to meet this requirement was largely completed during the thirteenth mission. A total of eight buildings, four at each site were destroyed. The beta stage separators building (building 245) at Tarmiya was destroyed with explosive charges. The destruction of the corresponding building at Ash Sharqat (building 21) was completed by mechanically collapsing the roof into the main hall and side bays. The power sheds for the main process buildings were essentially destroyed, but some work remains to be done. Other requirements were either verified as completed, or actions have been identified for completion and subsequent verification by the fourteenth IAEA inspection team. The progress of the work at Tarmiya was inspected four times during the mission and progress at Ash Sharqat was inspected twice.

5. As was the case in the eleventh and twelfth missions, the Iraqi side provided all equipment, materials and manpower necessary for the efficient implementation of the destruction plan under the supervision of the IAEA team.

6. The Iraqi authorities have indicated that the only foundry in Iraq with the capability to meet the requirement of remelting the large maraging steel pieces and diluting them with equal amounts of high carbon steel in a reasonable period of time is located near Basra. The maraging steel pieces (93 in total) were individually numbered with paint and photographed by the thirteenth inspection team. This action allows the Iraqi side to transport, unaccompanied, the maraging steel from its current location of Iskandariya to Basra. The material will be verified at the foundry and the dilution will be carried out under the observation of an inspection team.

7. Additional technical data, serial numbers and contract numbers relevant to components of four furnaces and an EBW, declared by the Iraqi side to have been intended for use in their centrifuge manufacturing programme, were collected by the thirteenth IAEA team. Similar data for an EBW that had been installed in building 73C at Tuwaltha was also collected. These data, together with other information, will be used to identify or to confirm the identity of component manufacturers and, possibly, the procurement routes.

8. The thirteenth team conducted a number of monitoring and miscellaneous follow-up activities. Primary among them was the checking of water levels in the irradiated fuel storage tanks at location B and equipment related follow-up work at the Ash Shakyli warehouses. The inspection team received the Iraqi-produced English version of the "Full, final and complete" report on Iraq's nuclear activities. The Iraqi counterparts were provided with the revised version of annex III of the long-term monitoring plan.

II. DESTRUCTION OF KEY TECHNICAL INSTALLATIONS AND EQUIPMENT

9. A list of actions to be undertaken pursuant to resolution 687 (1991) with respect to facilities at the Tarmiya and Ash Sharqat sites had been communicated to the Iraqi authorities on 15 May 1992 (see annex 1). Additional requirements regarding high-efficiency exhaust air filtration units (Tarmiya buildings 46, 57 and 225) and installed filter elements (HEPA and activated charcoal) were communicated to the Iraqi side in the course of the twelfth mission. Actions necessary to meet the requirements, involving the dismantling of infrastructure and removal of equipment began during the twelfth mission and were about 50 per cent complete at the conclusion of that mission. Details regarding the work at both sites is contained in the twelfth inspection report.

10. All work necessary to proceed with the destruction of the designated buildings at the Tarmiya and Ash Sharqat sites had been accomplished by the Iraqi side prior to the beginning of the thirteenth mission. The destruction of buildings (buildings 5, 38, 243 and 245 at Tarmiya and buildings 27, 29, 20 and 21 at Ash Sharqat) began on the first day of the inspection and continued throughout the mission. Priority was given to the destruction of the beta stage separators buildings (building 245 at Tarmiya and building 21 at Ash Sharqat). The following describes the status of activities, vis-à-vis the requirements contained in the 15 May 1992 memorandum, at the conclusion of the thirteenth IAEA mission. Some activities were not complete. The actions to be carried out by the Iraqi side in the interval between the thirteenth and fourteenth missions, for verification by the fourteenth IAEA team, are identified:

(a) Reduction of delivered power. There are two substations at Tarmiya internal to the site, one with three 31.5 MVA transformers and one with six 31.5 MVA transformers. These substations survived the bombing largely intact. Prior to the fourteenth mission, the substation with three step-down transformers is to be completely dismantled and the substation with six step-down transformers is to be reduced by 50 per cent (i.e., the removal of three transformers and associated switchgear). This will leave two operating transformers and one for standby. There may be a request for further reductions based upon IAEA's evaluation of the Iraqi side's proposal for alternative uses of the site. The substation serving Ash Sharqat suffered collateral damage during the war and was completely dismantled prior to the twelfth IAEA mission;

(b) The 1,200 mm system horizontal return irons (51 identical pieces each weighing about 30 tonnes) installed in building 33 at Tarmiya were removed during the twelfth mission and the pieces remain in open-air storage immediately in front of the building. The fact that no return iron had been installed in building 51 at Ash Sharqat has been verified;

(c) The general utilities equipment remaining in building 248 at Tarmiya will be stored in situ. The connecting flanges for the main pumps have been removed and seals placed across the openings. Conventional infrastructure

equipment removed from buildings 6, 38, 343 and 345 at Tarmiya has been released as well as similar equipment in the chemical buildings. Equipment at Tarmiya specifically not released are any process-related equipment in the chemical buildings, exhaust air ventilation equipment in buildings 225, 46 and 57, equipment in building 248, the Delta measuring device in building 271 and the horizontal return irons removed from building 33. The equipment remaining in the general utilities building at Ash Sharqat (building 31) had been removed to an open-air storage area during the period mid-July to mid-October 1991. Much of this equipment was damaged during the Persian Gulf war. Most infrastructure equipment at Ash Sharqat had been salvaged by the Iraqi side in the past. The equipment at Ash Sharqat not released are any process-related equipment in the chemical buildings and the two exhaust air filtration units located (not installed) in building 54;

(d) The beta stage separators buildings (building 245 at Tarmiya and building 21 at Ash Sharqat) were destroyed during the thirteenth mission. Building 245 at Tarmiya had not been damaged during the bombing. It was destroyed during the mission with explosive charges. Building 21 at Ash Sharqat was badly damaged during the war and subsequent Iraqi salvage activities. Its destruction was completed using heavy equipment to collapse the roof into the main hall and side bays. The power sheds (buildings 5, 38 and 243 at Tarmiya and buildings 27, 29 and 20 at Ash Sharqat) for the main process buildings were being destroyed using large power jack hammers. By the end of the thirteenth mission the destruction of these buildings was about 60 per cent complete at Tarmiya and about 80 per cent at Ash Sharqat. The destruction of these buildings is to be completed prior to the fourteenth mission, with particular care taken to collapse the floors (transformer level) into the basements. The Iraqi side's proposal to retain part of building 243 (about 9 per cent of the installed power) at Tarmiya to provide power for the water pumping station was accepted;

(e) The destruction of a total of 169 filter elements (HEPA and activated charcoal) removed from the exhaust air filtration system of building 225 was verified by the inspection team. The housings are being rendered harmless by the removal of the filter element holding racks and the welding of cross bars across the openings to prevent reinstallation. Similar actions are required with respect to HEPA filter elements and exhaust air filtration units located in buildings 46 and 57. The inventory of HEPA filter elements in building 57 is 80 units and the corresponding number in building 46 is 36 units.

11. With the completion of these activities, all known key technical facilities and equipment for research and production of enriched uranium using EMIS technology will have been destroyed or rendered harmless. The main process buildings (i.e. buildings designed specifically for the alpha and beta stage separators) are destroyed. The associated electrical power conditioning and delivery equipment has been dismantled and the buildings destroyed. In general, EMIS components (e.g. double poles, vacuum chambers, ion sources, etc.), consistent with Iraqi declarations and procurement data have been verified as destroyed. The exceptions are subjects of current follow-up

actions with the Iraqi side and Governments of Member States. The major chemical recovery buildings - buildings 225 and 57 at Tarmiya and buildings 34 and 54 at Ash Sharqat - were damaged during the Persian Gulf war. Building 225 at Tarmiya and buildings 34 and 54 at Ash Sharqat are damaged beyond recovery. Both sites, but particularly Tarmiya, will continue to be inspected under the long-term monitoring plan. The Iraqi side has made a general proposal regarding alternative industrial uses of the Tarmiya site. No proposals have been made with respect to Ash Sharqat.

III. ACTIVITIES RELATED TO EQUIPMENT AND MATERIALS

12. Previous IAEA inspection reports have described the large quantity (about 96 tonnes) of maraging steel currently maintained in open air storage at the Iskadariya State Enterprise for Mechanical Industries. This material, originally in the form of pipe and bar stock, had been intended for use in the Iraqi centrifuge enrichment programme. The existence of this material was first declared to the ninth IAEA inspection team. At that time the Iraqi side further declared that it had unilaterally, prior to the start of inspections under resolution 687 (1991), rendered the maraging steel harmless by melting the material and pouring it into irregular shaped chunks or blobs. Subsequent inspection activities led to the conclusions that (a) the total amount of material is about 96 tonnes distributed over 95 pieces, (b) the material has a chemical composition consistent with 350-grade maraging steel and (c) there is a technical possibility that the material could be reconstituted as 350-grade maraging steel and therefore further action is necessary. The further action, recommended by experts, was to remelt the maraging steel chunks and dilute it with equal amounts of high carbon steel. An experimental trial to evaluate this action was carried out during the eleventh mission. Two chunks were remelted and diluted with an equal amount of high carbon steel at the small foundry at Iskandariya. The analyses of samples taken from the mixture confirmed, in the judgement of the experts, that the recommended dilution would indeed render the material harmless.

13. The foundry at Iskandariya lacks the capacity to carry out the work. The Iraqi side indicated, however, that a foundry in the vicinity of Basra is capable of completing the destruction in a few days. Each of the remaining 93 pieces were individually numbered (with paint) and photographed by the thirteenth inspection team. This, together with the irregular shape of the pieces, provides the basis for verification of the transport of the material to Basra.

14. The team visited the State Enterprise for Heavy Engineering Equipment (Daura) twice during the thirteenth mission. The purpose was to collect additional technical data and procurement information concerning the furnaces and the EBW declared by Iraq to have been intended for use in their centrifuge manufacture programme. There are a total of four furnaces identified as manufactured by Degussa:

(a) An R&D-size oxidation furnace;

(b) A production-size oxidation furnace for final treatment of maraging steel components;

(c) An annealing furnace for intermediate treatment of maraging steel components;

(d) A brazing furnace for the manufacturing process of the extraction system.

Some of the ancillary equipment, including roughing vacuum pumps, diffusion and control systems were manufactured by Leybold. The inspection team collected the technical data, serial numbers and contract numbers necessary, together with other information, to identify or confirm the identity of component manufacturers and the procurement routes.

15. Additional technical data to augment previously collected information on components of the EBW system at Daura and a similar system that had been installed in building 73C at Tuwaltha were also collected. The EBW installed at Tuwaltha was badly damaged during the bombing. It has been moved to an open-air storage area adjacent to the Al Nafad storage site.

16. The twelfth mission included a detailed reassessment of the equipment transported to the Ash Shakyli warehouses by the 93-truck convoy from Fallujah during the third IAEA mission. The thirteenth IAEA team made a tour of the warehouses for the purpose of releasing some equipment and to see that the equipment that is to remain under IAEA control was moved to warehouse 13 (b) as requested by the twelfth team. The equipment had not been moved, although the Iraqi side indicated that arrangements had been made to do so. Seventeen more mixer-settler units (type MSU 5) were found, bringing the total to more than 70. The Iraqi side declared that these units were intended for installation at Tarmiya. A large number (about 40) of high voltage DC switches (thyrister oblique switches manufactured by Siemens and Thomson-CSF) of various sizes were identified and inventoried.

IV. OTHER ACTIVITIES

17. At the request of the Iraqi side, the water levels in the tanks containing irradiated fuel at location B were checked. Evaporation had resulted in a number of fuel elements being uncovered. Inspectors were present continuously to remove and then replace seals. This process will have to be repeated during the fourteenth mission.

18. Seals on doors to the hot cells, glove boxes and manipulator storage areas in building 9, Tuwaltha, were removed at the request of the Iraqi side, to allow some clean-up and the removal of office furniture and glassware. The seal on the door of the room containing the manipulators was replaced at the end of the day. The hot cells and glove boxes were rendered harmless during

previous inspections, but they have not been released and remain under the control of IAEA.

19. An Iraqi produced English version of the full, final and complete report was given to the inspection team mid-way through the mission. At about the same time, the revised annex III to the long-term monitoring plan was sent from Vienna and handed over to the Iraqi side. A meeting, dealing strictly with questions of clarification on both documents, was held during the mission. Answers to questions outstanding from the twelfth mission were provided by the Iraqi side on the last day of the inspection. The responses are being evaluated.

Annex 1

Actions required regarding Tarmiya/Ash Sharqat sites

The actions identified below apply to both sites and should be undertaken only in the presence of the IAEA inspection team.

Requested actions:

1. Reduce delivered electrical power to the Tarmiya and Ash Sharqat sites by approximately an order of magnitude. Proposals are expected from the Iraqi side on how this could be done such that (i) it can be monitored, and (ii) has minimum impact on other users in the area.

2. Remove the 1,200 mm system horizontal return iron from building 33, Tarmiya and building 51, Ash Sharqat to the Al Nafad storage area.

3. Remove the electrical cables connecting buildings 5 and 38 to building 33, Tarmiya; buildings 27 and 29 to building 51, Ash Sharqat; building 243 to building 245, Tarmiya; and building 20 to building 21, Ash Sharqat.

4. Dismantle and remove the general utilities infrastructure from buildings 248, Tarmiya and 31, Ash Sharqat.

5. Buildings 5, 38, 243, 245 - Tarmiya and buildings 27, 29, 20, 21 - Ash Sharqat are to be destroyed.

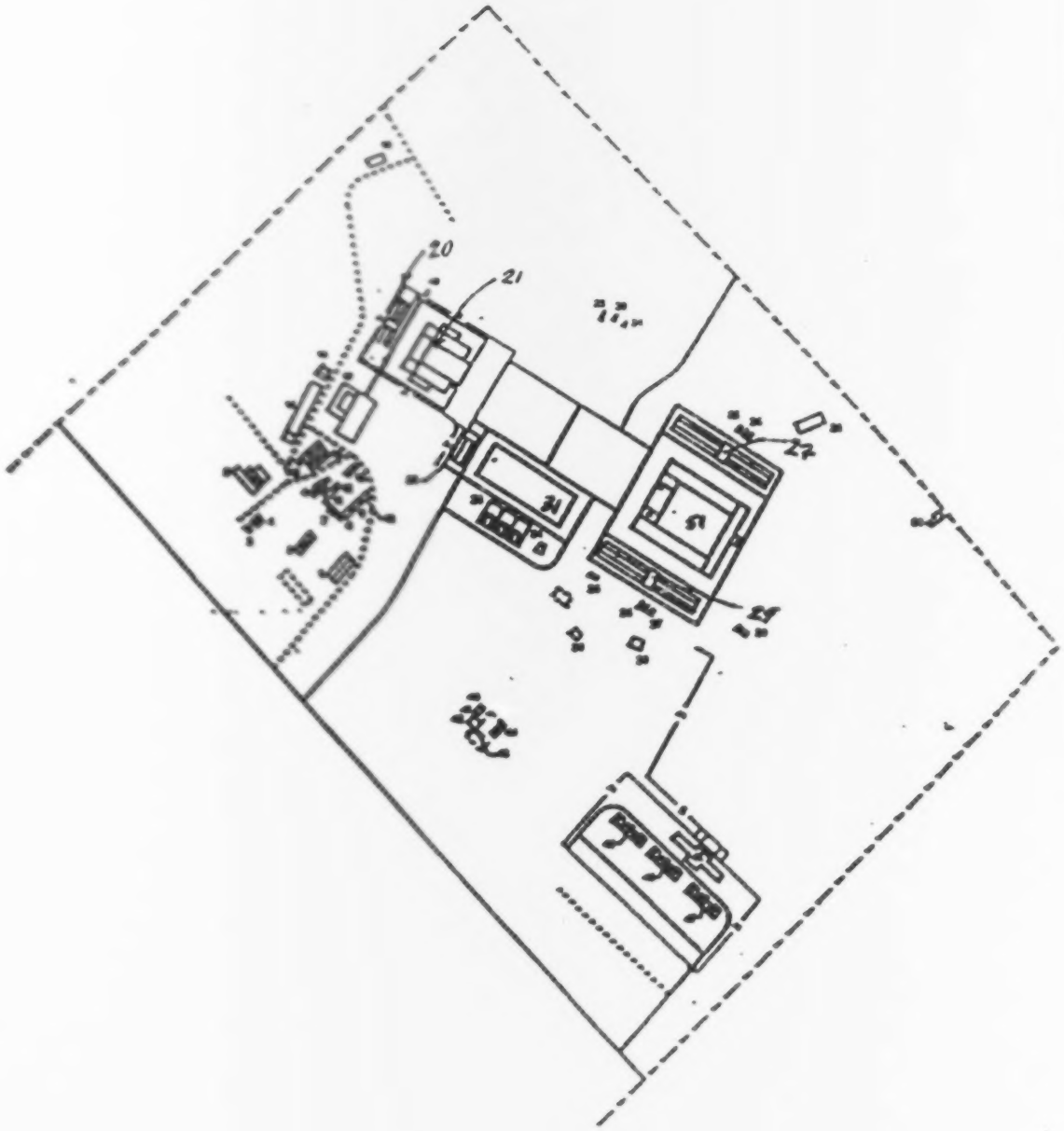
6. Building 33, Tarmiya and building 51, Ash Sharqat are not to be rebuilt.

Equipment and other useable materials, with the exception of the ventilation systems in building 245, Tarmiya and building 21, Ash Sharqat, may be salvaged, but should be stored at the site for inspection prior to removal.

Additional actions covering equipment at either or both sites may be required.

Tarmiya

Ash Sharqat



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Annex 2

List of documents received or sent

13-01 Mr. Zifferero to Mr. Al Hajjaj on 10 July 1992 regarding the release of items relating to the 92 truck convoy.

13-02 Mr. Al Hajjaj to Mr. Zifferero on 16 July 1992 regarding the urgent need for HEPA filters to be used in non-nuclear activities.

13-03 Mr. Hooper to Mr. Al Hajjaj on 19 July 1992 communicating a negative response to the Iraqi side's proposal regarding alternative uses for the high-efficiency filter elements.

13-04 Mr. Zifferero to Mr. Al Hajjaj on 19 July 1992 confirming the need for the destruction of the HEPA filters.

13-05 Mr. Hooper to Mr. Al Hajjaj on 19 July 1992 stipulating the conditions under which the glove box and hot cell areas in building 9, Tuwaltha, can remain unsealed.

13-06 Mr. Hooper to Mr. Al Hajjaj on 20 July 1992 describing the activities at Tarmiya and Ash Sharqat to be completed prior to the fourteenth IAEA mission.

13-07 Mr. Al Hajjaj to Mr. Hooper on 20 July 1992 transmitting answers to questions on project numbers, the Dijjia site and enrichment technology left over from the twelfth mission.